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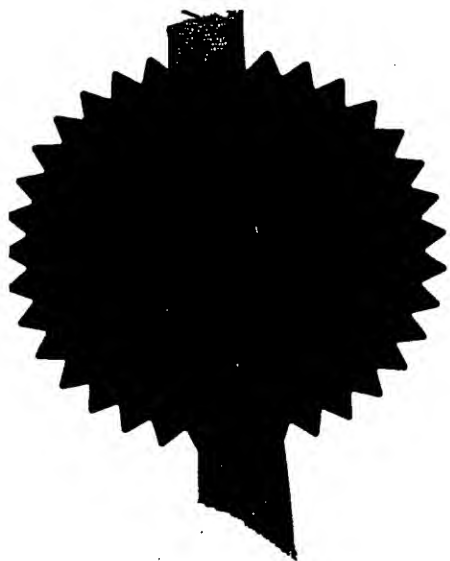
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Signed   
Dated 10 December 2003

19 NOV 2002

RULE 97  
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# Request for grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road  
Newport  
South Wales  
NP10 8QQ

1. Your reference

2. Patent application number  
(The Patent Office will fill in this part)

19 NOV 2002

0227056.9

3. Full name, address and postcode of the or of each applicant (underline all surnames)

08509403001

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

GUARDIAN SURE SCAN LIMITED.  
EDGE LANE FARM  
EDGE LANE, EDGE  
MALPAS  
CHESHIRE, SY14 8JU.

U.K.

4. Title of the invention

BANK NOTE AUTHENTICITY VERIFIER

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

Patents ADP number (if you know it)

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

YES

- a) any applicant named in part 3 is not an inventor, or
  - b) there is an inventor who is not named as an applicant, or
  - c) any named applicant is a corporate body.
- See note (d))

**Patents Form 1/77**

Enter the number of sheets for any of the following items you are filing with this form.  
Do not count copies of the same document

Continuation sheets of this form

Description  
BACKGROUND

Claim(s)

Abstract

Drawing(s)

(2 SHEETS)

(3 SHEETS)

(1 SHEET)

2 SHEETS

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature

C. J. C. C.

Date

18. 11. 2002

12. Name and daytime telephone number of person to contact in the United Kingdom

01948 820207

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**Notes**

- If you need help to fill in this form or you have any questions, please contact the Patent Office on 08459 500505.
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- If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.
- If you have answered 'Yes' Patents Form 7/77 will need to be filed.
- Once you have filled in the form you must remember to sign and date it.
- For details of the fee and ways to pay please contact the Patent Office.

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## BACKGROUND

Counterfeiting of monetary value has been evidenced since coins and documents of monetary value first came into being.

As time progressed and the quality of paper value notes increased, it was recognised that the copying of same was in itself becoming an art form and artisans accomplished in the tasks of reproducing notes of value were much sought after by the criminal elements of society.

Governments and Banking Institutes throughout the world collaborated to design and develop bank notes as we now know them to the stage where it would be difficult to replicate to a standard that would pass close inspection.

The second World War featured strenuous efforts by both the Allies and Germany to produce vast amounts of counterfeit bank notes, in an attempt to de stabilise the Governments of the time. Bank notes of this period were not sophisticated with regards to featuring anti counterfeit measures, and it was left to relying on the quality and feel of the paper, together with the clarity of printing to ensure that notes could easily be recognised. This failed and the more organised crime elements took full advantage.

It is only in recent times that the printing of bank notes has incorporated highly sophisticated deterrents such as holograms, raised printing, water marks, patterns that were only discernible under ultra violet lights and most importantly security threads. The printing houses endeavouring to standardise on a type of paper which when printed and varnished, not only gave long life, but also had a unique feel to it.

The Criminal elements in society soon recognised that they would have to improve their production techniques, and so employed highly qualified printers and in some cases engravers to produce printing plates, which for many years were employed as the method of printing bank notes. Some of the plates reproduced were so good that it took microscopic analysis to determine the authenticity of a note.

In most cases it was simply a slight error that proved to be the undoing and allowed a note to be classified as counterfeit, but more and more as raised ink

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patterns and water marks were introduced, the counterfeiters found their problems increasing, but the returns for their efforts were so great that they simply went out and bought information, and identical equipment to that used by the note producers, that in a matter of years, they were able to replicate genuine notes to a very high standard, most certainly, one that would pass a cursory inspection and require detailed analysis to prove that the note was otherwise than genuine.

As the volume of counterfeit notes increased, banks realised they had a major problem on their hands, but in reality, other than asking the note producers to enhance the security features, which they have done by incorporating holograms, the banks failed to take on board the gravity of the situation and it is a proven fact that in most instances, when counterfeit notes are handed into a bank, they simply go through the system and are reissued to customers.

According to recently released information from the Bank of England, at any given time 1% of all notes in use are counterfeit, this is a staggering amount, somewhere in the region of £270,000,000, with Police confirming that in certain areas, where there is a proliferation of drug users, 70% of notes examined were contaminated with a class A drug.

The Government is aware that the ever increasing volumes of counterfeit notes requires a solution and to this end, development houses have produced varying types of equipment, from the very simple ink pen that reacts to known chemicals in note, to ultra violet scanners, and sophisticated, yet very expensive photo synthesis based units.

The pens and scanners working on the ultra violet detection method, are by far the most widely used units, simply because of their cost and ease of use, but in themselves, they are not a solution, as the counterfeiters, simply by using a variety of fish oils, and other reactive oils, have by passed this method of testing. Other draw backs from using this type of product, being the despoiling of notes, simply by writing on them with the pen.

A common method used in many establishments, is for the till operator to tear a bank note through the security thread to see whether or not the thread runs through the middle of the note, this again is despoiling the note and most certainly is frowned upon by banks.

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The Bank of England does issue guidelines to detecting counterfeit notes in a pamphlet advising the public at large as to how to detect a counterfeit note, this is simply based on (a) Raised Printing (b) The colours of the note (c) the quality of paper (d) the presence of a water mark in the appropriate place (e) the quality of printing.

For the benefits of the above to be obvious, the viewer must have 20/20 vision, not be colour blind, have sensitive fingers, and most importantly, the note must be felt and viewed in good light. Collective circumstances that are very rarely in evidence.

Photosynthesis equipment is both expensive and time consuming to use, and could not be made readily available to small shopkeepers, and in busy supermarkets stores, which are a primary source for the passing off of counterfeit notes, there is most certainly not the space available, not has the till operator time to use same.

This leads us to the point where a small, highly reliable, cost effective unit is desirable as a means of reducing the counterfeit problem, one which is easily used by anyone, without any special training, having the capability, without further question of accurately determining the authenticity of ANY bank note.

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DESCRIPTION OF INVENTION

1 The invention is an electronic unit as shown in Drawings 1 & 2 attached hereto, that scans bank notes of all denominations from various countries and immediately determines the authenticity of the note by means of analysing the amount of light passing through the security thread encompassed in a bank note and comparing the readings of light registered with the receivers to a known authentic level.

2 The invention is so designed as to have a base with extended columns [Drawing 1 - 2 & 2a] through which a bank note can be easily swiped, in a similar manner to the methods used to swipe credit cards. The unit can be of any shape or design, but primarily as show in Drawings 1 & 2 attached, manufactured from any plastic or similar such suitable material.

3 The invention incorporates a PCB, shown as item [ 1 ] in Drawings 1 & 2, which in turn is so designed and produced incorporating sophisticated electronic chips for the storage of information and when necessary for the immediate comparison of information, which could be received from scanning devices shown in drawing [1 as 4 & 4a ] connected to the PCB Drawing 1 & 2 [1]

4 In all cases the invention utilises a scanner [Drawing 1 3 and 3a] and receiver, Drawing [1 ] 4 & 4a ] or it may be the case that one or more sets of scanners and receivers are used. These are mounted in the vertical pillars of the unit as shown in Drawing [1 ] 3 & 4] dimensionally opposed to each other, so that light emanating from the transmitter/s Drawing [1] 3 & 3a] is received by the opposing receiver. Drawing 1 [ 4 & 4a]

5 The invention could be of any discernible shape suitable for the purpose, capable of enclosing a PCB Drawing [ 1 ] of any notional size being dependent upon the number and size of components used.

The angle at which the pillars Drawing [1] 2 & 2a] extend from the base of the unit would normally but not essentially be at an angle of 90 degrees to the horizontal plane.

The scanners Drawing [1] 3 & 3a] are diametrically opposed at variable distances from receivers Drawing [1] 4 & 4a] and electronically connected to the PCB Drawing 1 [1 ] at an angle so as to provide a situation whereby the light emanating from the transmitter/s Drawing [1] 3 & 3a] is adequately received by the receiver/s Drawing [1] 4 & 4a]

6 The unit has a predetermined slot which is formed between units housing the transmitters and receivers as shown in Drawing [1] being the gap between Drawing [1] 2 and Drawing [1] 2a] along the horizontal plane so as to allow a bank note to pass between same.

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7 The Security Thread Drawing [2] 8 ] contained in each bank note Drawing [2] 7] is produced in by means of a secret process and as considered to be virtually impossible for counterfeit rings to copy or emulate in the full extent to which the security thread has been produced, the information contained therein and the manner in which the thread Drawing [2] 8 ] is inserted into a bank note, and it is in connection with this position, that the invention has been determined.

8. Each security thread is different, some are simply metallic, others could be polymer, plastic, or a combination of materials. Upon each is generally, but not always printed the issuing bank and the denomination of the bank note. The position of security thread Drawing [2] 8, is by way of example only as the positioning and location of the thread differs from note to note. Security threads also vary in width, but in all known cases have proven to run in the vertical plane.

9. The printing contained in each thread is repetitive throughout the thread and it is the positioning and amount of printing on the thread that restricts the full flow of emitted light to pass through the read to be scanned by Drawing 1 [3 and 3a] and the quantity and quality of emitted light received by the receiver/s Drawing [1] [ 4 & 4a] is then measured and information returned to the PCB Drawing [1] 7 ]

10. The more printing and the heavier the density of inks or dyes used in the security thread, the less the light received by the receiver.

11. The scanning of the security thread Drawing [2] 8] as it is passed through the slot between pillars Drawing [1] 2 & 2a] is instantaneous and the information obtained is fed to and processed by a microchip on the PCB Drawing [1] 7] for comparative purposes to known criteria. The comparison is instantaneous and if the scanned parameters comply with known parameters of genuine notes, then a signal is passed to an LED Drawing 1 [5] mounted in the casing of the unit, simultaneously to a small audible device Drawing [1] 6], the two activated together giving off information both visually and audibly that the scanned bank note can be considered as genuine.

12. The whole operation is simple and takes only a split second.

13. Power to the invention can be supplied to the unit from mains supply or batteries.

14. The invention is a sealed unit and impervious to climatic conditions, including high variances of temperatures.

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# CLAIMS FOR THE INVENTION

1. The invention is new
2. The invention can determine the authenticity of bank notes from most countries from which technical information as to the aspects of the security thread have been determined.
3. The invention is small, light weight and cost effective.
4. The invention is capable of working from all types of power source.
5. The invention is not subject to temperature variances.
6. The invention can readily be updated when a new range of bank notes is issued and or the position of the security thread is changed, or replaced.
7. The invention can determine the authenticity of bank notes scanned in nana seconds.
8. The invention provides an immediate solution for all sections of the community engaged in the handling of bank notes and who are not in a position to readily determine the authenticity of same.
9. The invention can be used throughout the world.

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**END ELEVATION**

